

### **REMARKS**

Claims 1, 2, 8, 10, 13-17 and 23 are amended, no claims are canceled or added; as a result, claims 1-84 remain pending in this application with claims 23-84 being withdrawn.

#### **Claim Objections**

Claims 2 and 10 were objected to based on informalities. Applicant amends claims 2 and 10 to clarify the claims and overcome the informalities therein. The amendments are not narrowing. Reconsideration and withdrawal of the objection are requested.

Claims 8 and 13 were objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant amends claims 8 and 13 to merely clarify the claim. The amendments are not narrowing. Reconsideration and withdrawal of the objection are requested.

#### **Information Disclosure Statement**

Examiner did not initial the US patents documents listed on the Form 449 filed on June 17, 2002 and returned to the applicant as an attachment to the prior Office Action. Applicant requests that the examiner complete this form in compliance with MPEP 609 and return a completely initialed copy of the Form 1449 to the applicant.

#### **Double Patenting Rejection**

Claims 1-23 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-23 of co-pending Application 10/081,818 and over claims 1-22 of co-pending Application No. 10/028,001. As this is a provisional rejection, applicant will consider a Terminal Disclaimer once the present claims are found allowable or the claims in the '818 application are allowed.

#### **§112 Rejection of the Claims**

Claims 14-17 and 23 were rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which



Applicant regards as the invention. Applicant respectfully traverses. Applicant submits that the claims as originally filed comply with 35 USC § 112, second paragraph. Reconsideration and withdrawal of the 35 USC § 112, second paragraph rejection are requested.

**Reservation of the Right to Swear Behind References**

Applicant maintains its right to swear behind any references which are cited in a rejection under 35 U.S.C. §§102(a), 102(e), 103/102(a), and 103/102(e). Statements distinguishing the claimed subject matter over the cited references are not to be interpreted as admissions that the references are prior art.

**§102 Rejection of the Claims**

Claim 1 was rejected under 35 USC § 102(b) as being anticipated by Faraone (U.S. 4,757,360). Applicant respectfully traverses.

Claim 1 recites, in part, “wherein the control gate is separated from the floating gate by an asymmetrical low tunnel barrier intergate insulator; and the asymmetrical low tunnel barrier intergate insulator having lower barrier height for an erase operation than for a retention operation. Applicant can not find this feature in Faraone. Accordingly, applicant submits that claim 1 is allowable. Reconsideration is requested.

Claim 1 was rejected under 35 USC § 102(e) as being anticipated by, and claim 10 under U.S.C. § 103(a) as being unpatentable over Uchida (U.S. 6,229,175). Applicant respectfully traverses.

Claim 1 recites, in part, “wherein the control gate is separated from the floating gate by an asymmetrical low tunnel barrier intergate insulator; and the asymmetrical low tunnel barrier intergate insulator having lower barrier height for an erase operation than for a retention operation. Applicant can not find this feature in Uchida. Accordingly, applicant submits that claim 1 is allowable. Reconsideration is requested.

Claim 10 recites, in part, wherein the control gate is separated from the floating gate by an asymmetrical low tunnel barrier intergate insulator having a number of small compositional ranges such that gradients can be formed by an electric field which produce different barrier heights at an interface with the floating gate and control gate. Applicant can not find these features in Uchida. For example, applicant can not find where Uchida teaches or suggests a



number of small compositional ranges in the asymmetrical low tunnel barrier intergate insulator. Moreover, the office action does not indicate which of the two floating gates of Uchida read on the present claim. The reference must teach or suggest all the claim elements. M.P.E.P. § 2142 (citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed.Cir. 1991)). Applicant submits that a prima facie case of obviousness has not been made.

Applicant respectfully traverses the single reference rejection under 35 U.S.C. § 103 since not all of the recited features of claim 10 is found in Uchida. Since all the elements of the claim are not found in the reference, Applicant assumes that the Examiner is taking official notice of the missing elements. Applicant respectfully objects to the taking of official notice with a single reference obviousness rejection and, pursuant to M.P.E.P. § 2144.03, Applicant respectfully traverses the assertion of Official Notice and requests that the Examiner cite references in support of this position.

Claims 1-6, 9-11, and 14-17 were rejected under 35 USC § 102(b) as being anticipated by or, in the alternative, under U.S.C. § 103(a) as obvious over Lee et al. (U.S. 5,923,056). Applicant respectfully traverses.

Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration. *In re Dillon* 919 F.2d 688, 16 USPQ2d 1897, 1908 (Fed. Cir. 1990) (en banc), cert. denied, 500 U.S. 904 (1991). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989); MPEP § 2131. "Anticipation requires the presence in a single prior reference disclosure of each and every element of the claimed invention, *arranged as in the claim*." *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984) (citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)) (emphasis added). Moreover, functional language is specifically authorized by *In re Swinehart*, 439 F.2d 210, 169 USPQ 226 (CCPA 1971); *In re Caldwell*, 138 USPQ 243 (CCPA 1963); *Lewmar Marine, Inc. v. Barient, Inc.*, 827 F.2d 744, 3 USPQ2d 1766 (Fed. Cir. 1987 ("so that" functional clause of claim renders reference non-anticipating); MPEP § 2173.05(g).

Applicant submits that Publication '536 does not teach or suggest all of the features of claim 1. Specifically, claim 1 recites, in part "wherein the control gate is separated from the




floating gate by an asymmetrical low tunnel barrier intergate insulator; and the asymmetrical low tunnel barrier intergate insulator having lower barrier height for an erase operation than for a retention operation.” Lee ‘056 does not teach or suggest an asymmetrical low tunnel barrier intergate insulator as recited in claim 1. The adjective “asymmetrical” is not merely a label. As recited in claim 1, “asymmetrical” is an adjective that describes a physical feature of the intergate insulator. Applicant can not find such a feature in Lee ‘056. Accordingly, Lee ‘056 does not teach all of the features of claim 1 and does not show the features in as complete detail as is contained in claim 1.

Applicant is also confused as to the statement in the Office Action that states “Lee’s structure does not distinguish from the claimed structure.” Applicant respectfully submits that this analysis is incorrect. The USPTO has the initial burden to establish a *prima facie* case of unpatentability by providing a claim construction and then reading the claim onto the prior art. However, it appears that the examiner is looking for features in Lee that distinguish over the pending claims. This is not the correct analysis. Clarification is requested.

Applicant further submits that the examiner can not merely ignore the term “asymmetrical” as it appears in the claims. In order to present a *prima facie* case of unpatentability, the examiner must present an analysis that compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden of proof standard, giving each term in a claim its broadest reasonable construction consistent with the specification. 37 C.F.R. 1.56(b)(2)(ii). Applicant submits that such an analysis has not been conducted for the term “asymmetrical” as recited in the claims

Claim 10 recites, in part, wherein the control gate is separated from the floating gate by an asymmetrical low tunnel barrier intergate insulator having a number of small compositional ranges such that gradients can be formed by an electric field which produce different barrier heights at an interface with the floating gate and control gate. Applicant can not find these features in Lee ‘056. For example, applicant can not find where Lee ‘056 teaches or suggests a number of small compositional ranges in the asymmetrical low tunnel barrier intergate insulator. Moreover, the office action does not indicate which of the two floating gates of Uchida read on the present claim. The reference must teach or suggest all the claim elements. M.P.E.P. § 2142



(citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed.Cir. 1991)). Applicant submits that a prima facie case of obviousness has not been made.

The Office Action appears to be taking official notice of claim 10 features in Lee '056. See Office Action pages 9 and 10. The Office Action states that "it would appear that the doped metal oxide layer 124, to be doped with about . . . which would appear to be non-uniform to some extent, which would appear to exhibit a number of small compositional ranges . . ." There are three assumptions regarding features of claim 10 not found in Lee '056 in this statement. Applicant submits that this does not form an adequate basis for establishing a prima facie case of unpatentability. As to the official notice, applicant traverses and requests a reference to support the examiner's statement as to what it appears is taught by Lee '056. Reconsideration of claim 10 is requested.

Applicant further traverses based on the examiner's statement that the claims contain statements of intended use. The claims are directed to integrated circuit structures, e.g., memory cells and transistors. Each term in the claims must be evaluated in view of the prior art and not ignored based on an incorrect assertion of intended use.

Based at least on the above applicant submits that a prima facie case of unpatentability has not been made. Reconsideration and allowance of claims 1-6, 9-11, and 14-17 are requested.

Applicant respectfully traverses the single reference rejection under 35 U.S.C. § 103 since not all of the recited features of claim 1-6, 9-11, and 14-17 are found in Lee '056. Since all the elements of the claim are not found in the reference, Applicant assumes that the Examiner is taking official notice of the missing elements. Applicant respectfully objects to the taking of official notice with a single reference obviousness rejection and, pursuant to M.P.E.P. § 2144.03, Applicant respectfully traverses the assertion of Official Notice and requests that the Examiner cite references in support of this position.

Claims 1-23 were rejected under 35 USC § 102(e) as being anticipated by or, in the alternative, under U.S.C. § 103(a) as obvious over Nguyen et al. (U.S. 2002/0137250). Applicant respectfully traverses.

Applicant submits that claims 1-23 are allowable over Nguyen for substantially similar reasons as stated above. Specifically, applicant can not find where Nguyen teaches or even suggests "an asymmetrical low tunnel barrier intergate insulator" as recited in the claims. The

term “asymmetrical” is not a statement of intended use but describes a physical characteristic of the intergate insulator. Moreover, the examiner appears to have equated “asymmetrical” with “graded” as used in Nguyen. However, “graded” and “asymmetrical” are not equivalent terms.

Claim 10 recites, in part, wherein the control gate is separated from the floating gate by an asymmetrical low tunnel barrier intergate insulator having a number of small compositional ranges such that gradients can be formed by an electric field which produce different barrier heights at an interface with the floating gate and control gate. Applicant can not find these features in Lee ‘056. For example, applicant can not find where Lee ‘056 teaches or suggests a number of small compositional ranges in the asymmetrical low tunnel barrier intergate insulator. Moreover, the office action does not indicate which of the two floating gates of Uchida read on the present claim. The reference must teach or suggest all the claim elements. M.P.E.P. § 2142 (citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed.Cir. 1991)). Applicant submits that a prima facie case of anticipation or obviousness has not been made.

Claims 1-23 were rejected under 35 USC § 102(e) as being anticipated by or, in the alternative, under U.S.C. § 103(a) as obvious over Lee et al. (U.S. Patent Application 2002/0106536). Applicant respectfully traverses.

Applicant submits that Publication ‘536 does not teach or suggest all of the features of claim 1. Specifically, claim 1 recites, in part “wherein the control gate is separated from the floating gate by an asymmetrical low tunnel barrier intergate insulator; and the asymmetrical low tunnel barrier intergate insulator having lower barrier height for an erase operation than for a retention operation.” Publication ‘536 does not teach or suggest an asymmetrical low tunnel barrier intergate insulator as recited in claim 1. The adjective “asymmetrical” is not merely a label. As recited in claim 1, “asymmetrical” is an adjective that describes a physical feature of the intergate insulator. Publication ‘536 is silent as to this feature of an intergate insulator. Accordingly, Publication ‘536 does not teach all of the features of claim 1 and does not show the features in as complete detail as is contained in claim 1.

Applicant submits that Publication ‘536 does not teach or suggest all of the features of claim 10. Specifically, claim 10 recites, in part wherein the control gate is separated from the floating gate by an asymmetrical low tunnel barrier intergate insulator having a number of small compositional ranges such that gradients can be formed by an electric field which produce

different barrier heights at an interface with the floating gate and control gate. Publication '536 does not teach or suggest an asymmetrical low tunnel barrier intergate insulator as recited in claim 10. The adjective "asymmetrical" is not merely a label. As recited in claim 10, "asymmetrical" is an adjective that describes a physical feature of the intergate insulator. Publication '536 is silent as to this feature of an intergate insulator. Accordingly, Publication '536 does not teach all of the features of claim 10 and does not show the features in as complete detail as is contained in claim 10.

Applicant further submits that the examiner can not merely ignore the term "asymmetrical" as it appears in the claims. In order to present a prima facie case of unpatentability, the examiner must present an analysis that compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden of proof standard, giving each term in a claim its broadest reasonable construction consistent with the specification. 37 C.F.R. 1.56(b)(2)(ii). Applicant submits that such an analysis has not been conducted for the term "asymmetrical" as recited in the claims.

Applicant further traverses the rejection of the claims based on the fact that the examiner is basing the rejection of the claims in part on his belief that it would be easier to prove Publication '536 has layers with the features of the present claims than the layers described in the specification. This appears to be an enablement rejection. If so applicant vigorously traverses. If not, then clarification as to this standard of proving what is taught by Publication '536 is requested. For example, what is the examiner's basis for this opinion? If it is personal knowledge, applicant requests an affidavit as required by 37 C.F.R. § 1.104(d)(2).

Based at least on the above applicant submits that a prima facie case of unpatentability has not been made. Reconsideration and allowance of claims 1-23 is requested.

### §103 Rejection of the Claims

Claim 10 was rejected under 35 USC § 103(a) as being unpatentable over Faraone (U.S. 4,757,360). Applicant respectfully traverses.

Claim 10 recites, in part, "the control gate is separated from the floating gate by an asymmetrical low tunnel barrier intergate insulator having a number of small compositional ranges such that gradients can be formed by an electric field which produce different barrier



heights at an interface with the floating gate and control gate." Applicant can not find where Faraone teaches these features. Moreover, Faraone teaches away from claim 10. Faraone that the applied voltage required to charge or discharge (write or erase) the floating gate will be substantially equal. See Faraone col. 6, lines 54-56. Applicant submits that Faraone does not teach all of the features of claim 10 and in the alternative teaches away from claim 10. Allowance of claim 10 is requested.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney ((612) 349-9587) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743

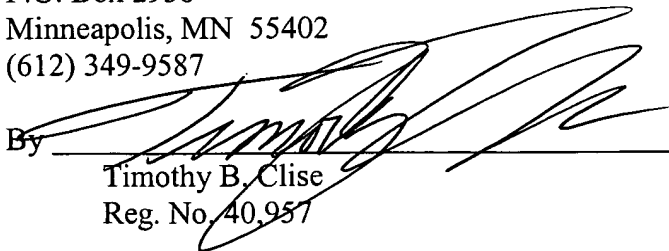
Respectfully submitted,

LEONARD FORBES ET AL.

By their Representatives,

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Date 8 April 2003

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on this 8<sup>th</sup> day of April, 2003.

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